

## AMENDMENTS TO THE CLAIMS

- 1       1. **(Currently Amended)** A sprinkler circuit comprising:
  - 2           a control circuit electrically connectable in series to a sprinkler cable running
  - 3           between a sprinkler controller and a sprinkler valve; and
  - 4           a moisture responsive circuit electrically connected to the control circuit, the
  - 5           moisture responsive circuit comprising a first pair of electrodes and a second pair of
  - 6           electrodes serially connected,
  - 7           wherein the control circuit is powerable by a valve signal sent from the sprinkler
  - 8           controller to the sprinkler valve, and wherein the control circuit is adapted to interrupt
  - 9           the valve signal to the sprinkler valve when both the first pair of electrodes experience
  - 10           water and the second pair of electrodes experience water the moisture responsive
  - 11           circuit experiences water.
2. **(Original)** The sprinkler circuit of Claim 1, wherein the control circuit includes a rectifier for rectifying the valve signal to generate a rectified signal.
3. **(Original)** The sprinkler circuit of Claim 2, wherein the control circuit further includes a low pass filter to filter the rectified signal to generate a filtered signal with reduced high frequency components.
4. **(Original)** The sprinkler circuit of Claim 3, wherein the control circuit provides the filtered signal to the moisture responsive circuit through a first port.
- 1       5. **(Original)** The sprinkler circuit of Claim 4, wherein:
  - 2           the moisture responsive circuit generates an attenuated signal by attenuating
  - 3           the filtered signal, wherein the attenuation is small when the moisture responsive circuit
  - 4           experiences water;
  - 5           the attenuated signal is provided to a second port on the control circuit; and

6 the valve signal to the sprinkler valve is interrupted when the attenuated signal  
7 exceeds a threshold.

6. (Original) The sprinkler circuit of Claim 5, wherein the second port is attached to a relay, and wherein the relay interrupts the valve signal to the sprinkler valve when the attenuated signal is sufficient to energize the relay.

7. (Original) The sprinkler circuit of Claim 6, wherein the control circuit includes a manual switch (M) electrically connected between the second port and the relay, wherein opening the manual switch over rides the moisture responsive circuit.

1 8. (Cancelled) The sprinkler circuit of Claim 5, wherein the moisture responsive circuit  
2 includes a first pair of electrodes, wherein the first pair of electrodes is electrically  
3 connected between the first port and the second port, and wherein a first resistance  
4 across the first pair of electrodes is reduced when the first pair of electrodes  
5 experiences water.

1 9. (Cancelled) The sprinkler circuit of Claim 8, wherein the moisture responsive circuit  
2 further includes a second pair of electrodes, wherein a second resistance across the  
3 second pair of electrodes is reduced when the second pair of electrodes experiences  
4 water, and wherein the first pair of electrodes and the second pair of electrodes are  
5 serially electrically connected between the first port and the second port

10. (Currently amended) The sprinkler circuit of Claim 19, wherein the first pair of electrodes are separated by between 1/16 inches and 1/8 inches, and wherein the second pair of electrodes are separated by between 1/16 inches and 1/8 inches

11. **(Currently amended)** The sprinkler circuit of Claim 1 9, wherein the first pair of electrodes are separated by approximately 3/32 inches, and wherein the second pair of electrodes are separated by approximately 3/32 inches.
12. **(Currently amended)** The sprinkler circuit of Claim 1 9, wherein the first pair of electrodes and the second pair of electrodes are made from one of a group consisting of copper alloy, aluminum alloy, and stainless steel.
13. **(Original)** The sprinkler circuit of Claim 12, wherein the first pair of electrodes and the second pair of electrodes are made from stainless steel.
14. **(Currently amended)** The sprinkler circuit of Claim 1 4, wherein control circuit includes a Potentiometer (P) ~~between the filter and the first port~~ for adjusting the control circuit for various soil types and plant types.
15. **(Original)** The sprinkler circuit of Claim 1, wherein the control circuit includes an AC relay for controlling the transmission of the valve signal to the sprinkler valve, and wherein the valve signal is attenuated by a potentiometer and provided from the potentiometer to the moisture responsive circuit and from the moisture responsive circuit to the AC relay.
16. **(Original)** The sprinkler circuit of Claim 1, wherein the valve signal is a DC signal and wherein the control circuit includes a relay for controlling the transmission of the valve signal to the sprinkler valve, and wherein the valve signal is attenuated by a potentiometer and provided from the potentiometer to the moisture responsive circuit and from the moisture responsive circuit to the relay.

1       17. (Original) An irrigation system comprising:  
2               at least one sprinkler valve;  
3               a control circuit providing a valve signal to the sprinkler valve; and  
4               a moisture responsive circuit electrically connected between a first port and a  
5       second port of the control circuit, the moisture responsive circuit including a first pair of  
6       electrodes and a second pair of electrodes serially connected between the first port  
7       and the second port, wherein a first resistance across the first pair of electrodes is  
8       reduced when the first pair of electrodes experiences water and a second resistance  
9       across the second pair of electrodes is reduced when the second pair of electrodes  
10      experiences water,

11               wherein the control circuit interrupts the valve signal to the sprinkler valve when  
12       the sum of the first resistance and the second resistance is below a resistance  
13       threshold.

1       18. (Original) The sprinkler circuit of Claim 17 wherein:  
2               the control circuit is electrically connected in series to a sprinkler cable running  
3       between a sprinkler controller and the sprinkler valve;  
4               the valve signal is generated by the sprinkler controller; and  
5               the control circuit is powered by the valve signal.

19. (Original) The sprinkler circuit of Claim 17 wherein the first pair of electrodes and  
the second pair of electrodes are separated horizontally by between one inch and five  
inches.

20. (Original) The sprinkler circuit of Claim 19 wherein the first pair of electrodes and  
the second pair of electrodes are separated horizontally by approximately three inches.

21. (Original) The sprinkler circuit of Claim 17 wherein the first pair of electrodes and the second pair of electrodes are vertically separated by between two inches and twelve inches.

22. (Original) The sprinkler circuit of Claim 21 wherein the first pair of electrodes and the second pair of electrodes are vertically separated by approximately four inches.

1       23. (Original) A method for controlling an irrigation system, the method comprising:  
2               serially connecting a control circuit to a sprinkler cable carrying a valve signal to  
3               a sprinkler valve;  
4               providing the valve signal to a rectifier and to a relay;  
5               rectifying the valve signal in the control circuit to generate a rectified signal;  
6               providing the rectified signal from the control circuit to a moisture responsive  
7               circuit;  
8               variably attenuating the rectified signal in the moisture responsive circuit to  
9               obtain an attenuated signal, wherein the amount of attenuation depends on the amount  
10              of water experienced by the moisture responsive circuit;  
11              providing the attenuated signal from the moisture responsive circuit to the relay  
12              in the control circuit, wherein the level of the attenuated signal determines if the relay is  
13              energized;  
14              zeroing the valve signal to the sprinkler valve if the relay is energized; and  
15              providing the valve signal to the sprinkler valve through the relay if the relay is  
16              un-energized.